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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/356,260	07/16/1999	ALFONS EIZENHOEFER	7-2-1	7579

7590 01/28/2002

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EXAMINER

THANGAVELU, KANDASAMY

ART UNIT	PAPER NUMBER
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2123

DATE MAILED: 01/28/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

AG

H. G

# Office Action Summary

Application No.

09/356,260

Applicant(s)

EIZENHOEFER ET AL.

Examiner

Kandasamy Thangavelu

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 27 August 1999.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Introduction***

1. Claims 1 to 19 of the Application 09/356260 filed on 16 July 1999 are pending.

### ***Foreign Priority***

2. Acknowledgment is made of applicant's claim for foreign priority based on an application 98305811.6 filed in Europe on July 21, 1998. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

3. Acknowledgment is made of the information disclosure statement filed on July 16, 1999 together with the copies of patents. The patents have been considered in reviewing the claims.

### ***Abstract***

4. The abstract is objected to because of the following informalities:  
Lines 6-7, "use of a big number " is incorrect. It should be "use of a large number".  
Appropriate correction is required.

***Specification***

5. The disclosure is objected to because of the following informalities:

Page 2, Lines 2-3, "an other " is incorrect.

Page 3, Line 4, "an other " is incorrect.

Page 4, Line 19 "three bit are necessary " is incorrect.

Page 5 Line 20 "if, depart for the above described transmission " is incorrect.

Page 6, Lines 9, 10, 11, 13, 14 and 16, "gap" is incorrect word. The correct word is "column".

Page 7, Line 27, "a equalizer " is incorrect.

Page 7, Line 28 "present invention this elements are not shown" is grammatically incorrect.

Appropriate corrections are required.

***Claim Objections***

6. The following is a quotation of 37 C.F.R § 1.75 (d)(1):

The claim or claims must conform to the invention as set forth in the remainder of the specification and terms and phrases in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description.

7. Claims 2-8, and 10-19 are objected to because of the following informalities:

Claims 2, Line 2, "in, that "is incorrect. Line 4, "is synchronized" is grammatically incorrect.

Claim 3, Line 2, "in, that "is incorrect.

Claim 4, Line 2, "in, that "is incorrect.

Line 5, "into different links of the uplink is a quality criterion for the transmission" is incorrect. The criterion is a requirement. The correct term is "quality measurement". See specification Page 5, Line 25.

Line 8, "indicated" is incorrect.

Claims 5-8, Line 2, "in, that "is incorrect.

Claim 10, Line 2, "in, that "is incorrect.

Claim 11, Line 2, "in, that "is incorrect. Line 4, "far inserting" is incorrect.

Claim 12, Line 2, "in, that "is incorrect. Line 3, "for coding (11;21)" is incorrect. Specification Page 7, Line 23 refers to it as "channel coder/decoder". So it should be "channel coding" as in Claim 11, Line 3.

Claims 13-16, Line 2, "in, that "is incorrect.

Claim 17, Line 2, "in, that "is incorrect.

Line 7, "different frames indicate a quality criterion" is incorrect. The criterion is a requirement. The correct term is "quality measurement". See specification Page 5, Line 25.

Claim 18, Line 2, "in, that "is incorrect.

Claim 19, Line 2, "in, that "is incorrect.

Line 3, "said quality criterion for transmission" is incorrect. The criterion is a requirement. The correct term is "quality measurement". See specification Page 5, Line 25.

Appropriate corrections are required.

**Prior Art**

8. **Alanara (AL)** (US Patent 6,286,122) teaches Method and apparatus for transmitting DTX\_LOW state information from mobile station to base station in Time Division Multiple Access (TDMA) cellular air traffic. **AL** teaches the following:

1. The invention relates to **radiotelephones** or mobile stations such as those capable of operation with a **cellular network** (Col 1, Lines 18-20).
2. A 40 millisecond frame consists of six time slots (Col 1, Lines 34-35).
3. The SYNC word/time slot identifier is used for **slot synchronization** (Col 1, Lines 45-47).
4. While in the Discontinuous transmission (DTX) low power state, the mobile station may still be required to periodically **send channel quality measurements** taken on **adjacent base stations** as part of mobile assisted hand off operation (Col 2, Lines 9-12).
5. In the existing **global systems for mobile communication** (GSM) DTX operation, the entry to the DTX mode is indicated by Control Noise (CN) parameters sent with inband signalling (Col 3, Lines 1-3).
6. ✓ The **signalling word** conveys radio **channel measurement** information from the **mobile station to the base station** (Col 4, Lines 25-27).
7. Operating a mobile station comprising transmitting the data word, using the unused **portion of a slot** containing interleaved signalling word, by **interleaving the data word with the signalling word** (Col 4, Lines 18-24).
8. The air interface standard is assumed to include a physical and **logical frame** structure (Col 5, Lines 22-24).
9. To make the **channel coding** of the free portion of the last slot more resistive to channel errors, a 1/8 rate **convolutional coding** can be employed by the controller (Col 6, Lines 41-43).
10. An alternative method uses these **additional bits** with any suitable channel coding to carry any **other control information** to the **base station** (Col 9, Lines 54-56).
11. ✓ The **channel quality measurement** (CQM) can always utilize the unused **interleaver bits** over **at least two slots** of interleaving (Col 10, Lines 52-54).
12. The use of these unused **bits for sending channel quality information** (Col 11, Lines 37-38).
13. A **cellular communication system** comprising at least one **base station** and at least one **mobile station** (Col 11, Lines 37-38).

9. **Le Strat et al. (LS)** (US Patent 6,134,220) teaches Method of adapting the air interface in a mobile radio system. **LS** teaches the following:

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1. The invention applies to cellular **mobile radio systems** such as systems conforming to the GSM (**Global System for Mobile Communication**) standard (Col 1, Lines 10-12).
2. A mobile radio system provides at least **two coding modes**, each mode corresponding to a predetermined **source code** and a predetermined **channel code** (Abstract).
3. Two separate analyses of **transmission quality** are carried out for each transmission direction, and for each transmission direction, one of the **coding modes is selected** in accordance with the corresponding transmission quality analysis (Abstract).
4. The TDMA technique divides time into **frames** of fixed and predetermined duration (Col 1, Lines 20-21).
5. The GSM system provides a first data communication mode called the **full rate mode** in which a time slot is transmitted in each frame, and a second transmission mode called the **half rate mode**, in which the data signal is transmitted in one time slot only every **two frames** (Col 1, Lines 32-37).
6. The half rate mode corresponds to **channel coding** with half the yield of that of the full rate mode (Col 1, Lines 43-45).
7. The invention presupposes **feedback of quality information** in at least one direction before a decision is taken (Col 4, Lines 6-8).
8. Exchange of information (**measured quality and/or change of coding mode**) between the two stations (Col 4, Lines 19-21).
9. The transmission mode corresponds to the use of a certain **coding mode** (Col 4, Lines 27-29).
10. A **change of coding mode** is necessary if the **quality of the channel** deteriorates (Col 4, Lines 60-61).
11. The **decision to change the coding mode** is taken in base transceiver station (Col 7, Lines 6-8).
12. Mobile station transmitting to base transceiver station information representative of **transmission quality** in the base transceiver station **to the mobile station direction** (Col 7, Lines 8-11).
13. A base transceiver station comprises **means for determining** at least a first indication representative of **transmission quality** in the mobile station **to base transceiver direction** (Col 7, Lines 28-32).
14. A base transceiver station comprises **means for transmitting** to mobile station information representative of **coding and/or transmission modes** selected (Col 7, Lines 40-42).
15. A mobile station including **means for receiving** an indication representative of **coding and/or transmission modes** selected (Col 7, Lines 49-50):

10. **Rasanen (RS)** (US Patent 6,172,968) teaches High speed data transmission in mobile communication networks. **RS** teaches the following:

1. The high speed data signal is packed into transmission **frames** which contain a fixed number N of **information bits** (Abstract).
  2. From the remaining free information bits of the frame, n bits are **control bits** which **indicate** the number of **user bits** in the frame (Abstract).
  3. The control channels are for **signalling** between a base station and mobile stations (Col 1, Lines 18-19).
  4. The maximum data transfer rate on one traffic channel is limited to a relatively slow level according to the available bandwidth and the **channel coding** and error correction employed in the transmission (Col 1, Lines 27-31).
  5. A variable number of these **information bits** of the transmission frame is utilized for the transmission of actual user data. The rest of the bits are utilized for the transmission of **control information** (Col 3, Lines 23-27).
  6. The mobile station is synchronized with the allotted time slot to transmit and receive radio-frequency bursts (Col 4, Lines 38-40).
  7. The invention relates to carrying out and **synchronizing data transmission** over such connection (Col 4, Lines 55-56).
  8. Each low-speed data signal is separately subjected to **channel coding** (Col 4, Lines 62-64).
  9. Depending on the type of frame, the header comprises different kinds of **synchronization and control information** (Col 6, Lines 15-17).
11. **Hellwig et al. (HW)** (US Patent 6,295,302) teaches Alternating speech and data transmission in digital communication systems. **HW** teaches the following:
1. An inband **signalling bit pattern** is included within **selected blocks** sent by a TX-alternator in the **sending node to indicate** whether all following digital information is to be interpreted by the receiving node as **speech or data** (Abstract).
  2. A **mobile user** might desire a feature such as voice controlled **automatic call routing** (Col 1, Lines 42-43).
  3. This service requires the transmission of both data, for the **control commands** to the server and voice parameters for the spoken commands (Col 1, Lines 48-50).
  4. Voice is encoded into speech parameters which are, in **full rate coding scheme** of the Global System for Mobile Communication (GSM) (Col 2, Lines 20-23).
  5. A tandem free operation-**transcoder** and adapter unit (TFO\_TRAU) is imposed within both the **uplink and downlink** (Col 4, Lines 31-34).
  6. The TRAUs are controlled by the BTSs and the speech/data information and the TRAU **control signals** are exchanged between the **channel codec unit** in the BTS and the TARU and are **transferred in frames** denoted "TARU Frames" (Col 4, Lines 53-57).



7. A first inband **signaling bit pattern** is sent within one of the **discrete blocks** of digital information between the first node and the second node (Col 5, Lines 27-30).
8. A second inband **signaling bit pattern** is sent within **a successive one of the discrete blocks** of digital information (Col 5, Lines 32-34).

***Claim Rejections - 35 USC § 102***

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

13. Claim 1 is rejected under 35 U.S.C. 102(e) as being clearly anticipated by **Alanara (AL)** (US Patent 6,286,122).

Claim 1 specifies:

1. A method for signaling of information in a frame based transmission system.
2. The signaling information contains information necessary for the operation of the transmission system.
3. Inserting signaling information related to individual frames into the individual frames.
4. Partitioning signaling information and inserting the partitioned signaling information into different frames.

As per Claim 1, **AL** recites a method for signaling of information in a frame based transmission system. **AL** says, "Operating a mobile station comprising transmitting the data word, using the unused **portion of a slot** containing interleaved signalling word, by **interleaving the data word with the signalling word**" (Col 4, Lines 18-24) and "The air interface standard is assumed to include a physical and **logical frame** structure" (Col 5, Lines 22-24).

**AL** teaches that the signaling information contains information necessary for the operation of the transmission system. **AL** says, "The **signalling word** conveys radio **channel measurement** information from the **mobile station to the base station**" (Col 4, Lines 25-27) and "Operating a mobile station comprising transmitting the data word, using the unused **portion of a slot** containing interleaved signalling word, by **interleaving the data word with the signalling word**" (Col 4, Lines 18-24).

**AL** teaches inserting signaling information related to individual frames into the individual frames. **AL** says, "A 40 millisecond frame consists of six time slots" (Col 1, Lines 34-35) and "Operating a mobile station comprising transmitting the data word, using the unused **portion of a slot** containing interleaved signalling word, by **interleaving the data word with the signalling word**" (Col 4, Lines 18-24).

**AL** teaches partitioning signaling information and inserting the partitioned signaling information into different frames. **AL** says, "An alternative method uses these **additional bits** with any suitable **channel coding** to carry any **other control information** to the **base station**" (Col 9, Lines 54-56) and "The **channel quality measurement (CQM)** can always utilize the unused **interleaver bits** over **at least two slots** of interleaving" (Col 10, Lines 52-54).

14. Claim 2 is rejected under 35 U.S.C. 102(e) as being clearly anticipated by **AL**.

Claim 2 includes the method of Claim 1, and further specifies:

1. Inserted signaling information and the inserted partitioned signaling information are synchronized by using the given synchronization of the frame based transmission system.

As per Claim 2, **AL** teaches the method of Claim 1, as discussed above.

**AL** also teaches that inserted signaling information and the inserted partitioned signaling information are synchronized by using the given synchronization of the frame based transmission system. **AL** says, "The SYNC word/time slot identifier is used for **slot synchronization**"(Col 1, Lines 45-47). Additionally, **Rasanen (RS)** (US Patent 6,172,968) teaches that "The invention relates to carrying out and **synchronizing data transmission** over such connection" (Col 4, Lines 55-56) and "Depending on the type of frame, the header comprises different kinds of **synchronization and control information**" (Col 6, Lines 15-17).

15. Claim 6 is rejected under 35 U.S.C. 102(e) as being clearly anticipated by **AL**.

Claim 6 includes the method of Claim 1, and further specifies:

1. The partitioned signaling information inserted into different frames is channel coded together with data contained in the different frames.

As per Claim 6, **AL** teaches the method of Claim 1, as discussed above.

**AL** also teaches that the partitioned signaling information inserted into different frames is channel coded together with data contained in the different frames. **AL** says, "An alternative method uses these **additional bits** with any suitable **channel coding** to carry any **other control information** to the base station" (Col 9, Lines 54-56) and "The **channel quality measurement**

(CQM) can always utilize the unused **interleaver bits** over **at least two slots** of interleaving”  
(Col 10, Lines 52-54).

16. Claim 7 is rejected under 35 U.S.C. 102(e) as being clearly anticipated by **AL**.

Claim 7 includes the method of Claim 1, and further specifies:

1. The transmission system is a radio network system.

As per Claim 7, **AL** teaches the method of Claim 1, as discussed above.

**AL** also teaches that the transmission system is a radio network system. **AL** says, “The invention relates to **radiotelephones** or mobile stations such as those capable of operation with a **cellular network**” (Col 1, Lines 18-20).

17. Claim 8 is rejected under 35 U.S.C. 102(e) as being clearly anticipated by **AL**.

Claim 8 includes the method of Claim 1, and further specifies:

1. The radio network system is a GSM system.

As per Claim 8, **AL** teaches the method of Claim 1, as discussed above.

**AL** also teaches that radio network system is a GSM system. **AL** says, “In the existing **global systems for mobile communication** (GSM) DTX operation, the entry to the DTX mode is indicated by Control Noise (CN) parameters sent with inband signaling” (Col 3, Lines 1-3).

***Claim Rejections - 35 USC § 103***

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

19. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Alanara (AL)** (US Patent 6,286,122) in view of **Le Strat et al. (LS)** (US Patent 6,134,220).

Claim 3 includes the method of Claim 1 or 2, and further specifies:

1. The signaling information and the partitioned signaling information indicate coding mode used for coding and decoding data in the transmission system.

As per Claim 3, **AL** teaches the method of Claim 1 and 2, as discussed above.

**AL** does not teach that the signaling information and the partitioned signaling information indicate coding mode used for coding and decoding data in the transmission system. **LS** teaches that the signaling information and the partitioned signaling information indicate coding mode used for coding and decoding data in the transmission system. **LS** says, "A base transceiver station comprises **means for transmitting** to mobile station information representative of **coding and/or transmission modes** selected" (Col 7, Lines 40-42).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of **Alanara** with the signaling information of **LS** indicating coding mode used for coding and decoding data in the transmission system. The artisan would be motivated to incorporate the signaling information of **LS** indicating coding mode used for coding and

decoding data in the transmission system as the correct coding mode information could then be sent to the mobile station.

20. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Alanara(AL)** in view of **Le Strat et al. (LS)**.

Claim 4 includes the method of Claim 1, and further specifies:

1. The inserted signaling information related to individual frames indicates a coding mode used for coding and decoding data in the transmission system.
2. The partitioned signaling information inserted into different frames of the uplink is a quality criterion for the transmission.
3. The partitioned signaling information inserted into different frames of the downlink indicates a coding mode used for coding and decoding data in the transmission system.

As per Claim 4, **AL** teaches the method of Claim 1, as discussed above.

**AL** teaches that signaling information is inserted into different frames. **AL** says, "An alternative method uses these **additional bits** with any suitable **channel coding** to carry any **other control information to the base station**" (Col 9, Lines 54-56). **AL** does not teach that the inserted signaling information related to individual frames indicates a coding mode used for coding and decoding data in the transmission system. **Le Strat et al. (LS)** teaches that the inserted signaling information related to individual frames indicates a coding mode used for coding and decoding data in the transmission system. **LS** says, "A base transceiver station comprises **means for transmitting** to mobile station information representative of **coding and/or transmission modes** selected" (Col 7, Lines 40-42).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of **Alanara** with the signaling information of **LS** indicating

coding mode used for coding and decoding data in the transmission system. The artisan would be motivated to incorporate the signaling information of **LS** indicating coding mode used for coding and decoding data in the transmission system as the correct coding mode information could then be sent to the mobile station.

**AL** does not teach that the partitioned signaling information inserted into different frames of the uplink is a quality (criterion) measurement for the transmission. **Le Strat et al. (LS)** teaches that the partitioned signaling information inserted into different frames of the uplink is a quality (criterion) measurement for the transmission. **LS** says, "Mobile station transmitting to base transceiver station information representative of **transmission quality** in the base transceiver station **to the mobile station direction**" (Col 7, Lines 8-11).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of **Alanara** with the quality (criterion) measurement information of **LS** indicating quality in the transmission system. The artisan would be motivated to incorporate the quality (criterion) measurement information of **LS** so the fixed station could get feedback information on the quality of transmission.

**AL** does not teach that the partitioned signaling information inserted into different frames of the downlink indicates a coding mode used for coding and decoding data in the transmission system. **Le Strat et al. (LS)** teaches that the partitioned signaling information inserted into different frames of the downlink indicates a coding mode used for coding and decoding data in the transmission system. **LS** says, "A base transceiver station comprises **means for transmitting** to mobile station information representative of **coding and/or transmission modes** selected" (Col 7, Lines 40-42).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of **Alanara** with the partitioned signaling information inserted into different frames of the downlink of **LS** indicating coding mode used for coding and decoding data in the transmission system. The artisan would be motivated to incorporate the partitioned signaling information of **LS** indicating coding mode used for coding and decoding data in the transmission system as the correct coding mode information could then be sent to the mobile station.

21. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Alanara(AL)** in view of **Le Strat et al. (LS)**.

Claim 5 includes the method of Claim 1, and further specifies:

1. The inserted signaling information related to individual frames is channel coded separately.

As per Claim 5, **AL** teaches the method of Claim 1, as discussed above.

**AL** does not teach that the inserted signaling information related to individual frames is channel coded separately. **Le Strat et al. (LS)** teaches that the inserted signaling information related to individual frames is channel coded separately. **LS** says, "A mobile radio system provides at least **two coding modes**, each mode corresponding to a predetermined **source code** and a predetermined **channel code**" (Abstract) and "A **change of coding mode** is necessary if the **quality of the channel** deteriorates" (Col 4, Lines 60-61). It is understood that since each frame can be coded separately, the frame can also be channel coded separately.



It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the method of **Alanara** with the method of **Le Strat et al. (LS)** that includes signaling information related to individual frames channel coded separately. The artisan would be motivated to include the method of **Le Strat et al.** as it would enable the system to respond to quality deterioration.

22. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Alanara(AL)** in view of **Le Strat et al. (LS)** (US Patent 6,134,220).

Claim 9 specifies:

1. A frame based transmission system for signaling of information.
2. The signaling information contains information necessary for the operation of transmission system.
3. Means for coding and decoding of data.
4. Means for handling the coded data in frame format.
5. Means for transmitting and receiving the frames.
6. Means for inserting and evaluating signaling information into and from individual frames related to the individual frames.
7. Means for partitioning signaling information and inserting and evaluating the partitioned information into and from different frames.

As per Claim 9, **AL** recites a frame based transmission system for signaling of information. **AL** says, "A **cellular communication system** comprising at least one **base station** and at least one **mobile station**" (Col 11, Lines 37-38). **AL** also says, "Operating a mobile station comprising transmitting the data word, using the unused **portion of a slot** containing interleaved signalling word, by **interleaving the data word with the signalling word**" (Col 4, Lines 18-24) and "The air interface standard is assumed to include a physical and **logical frame** structure" (Col 5, Lines 22-24).

**AL** teaches that the signaling information contains information necessary for the operation of the transmission system. **AL** says, “The **signalling word** conveys radio **channel measurement** information from the **mobile station to the base station**” (Col 4, Lines 25-27) and “Operating a mobile station comprising transmitting the data word, using the unused **portion of a slot** containing interleaved signalling word, by **interleaving the data word with the signalling word**” (Col 4, Lines 18-24).

**AL** teaches means for transmitting and receiving the frames. **AL** says, “A **cellular communication system** comprising at least one **base station** and at least one **mobile station**” (Col 11, Lines 37-38) and “The air interface standard is assumed to include a physical and **logical frame** structure” (Col 5, Lines 22-24).

**AL** teaches means for inserting and evaluating signaling information into and from individual frames related to the individual frames. **AL** says, “A 40 millisecond frame consists of six time slots” (Col 1, Lines 34-35) and “Operating a mobile station comprising transmitting the data word, using the unused **portion of a slot** containing interleaved signalling word, by **interleaving the data word with the signalling word**” (Col 4, Lines 18-24).

**AL** teaches means for partitioning signaling information and inserting and evaluating the partitioned information into and from different frames. **AL** says, “An alternative method uses these **additional bits** with any suitable **channel coding** to carry any **other control information** to the **base station**” (Col 9, Lines 54-56) and “The **channel quality measurement (CQM)** can always utilize the unused **interleaver bits** over **at least two slots** of interleaving” (Col 10, Lines 52-54).

**AL** does not teach means for coding and decoding of data. **LS** teaches means for coding and decoding of data. **LS** says, "A mobile radio system provides at least **two coding modes**, each mode corresponding to a predetermined **source code** and a predetermined **channel code**" (Abstract) and "A **change of coding mode** is necessary if the **quality of the channel** deteriorates" (Col 4, Lines 60-61). It is understood that the coding modes are used to code the data into frames before sending and to decode the frames when received to obtain the data.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of **Alanara** with the means for coding and decoding of data of **LS**. The artisan would be motivated to incorporate the means for coding and decoding of data of **LS** as the data could be sent using correct coding mode to maintain transmission quality.

**AL** does not teach means for handling the coded data in frame format. **LS** teaches means for handling the coded data in frame format. **LS** says, "A mobile radio system provides at least **two coding modes**, each mode corresponding to a predetermined **source code** and a predetermined **channel code**" (Abstract) and "The TDMA technique divides time into **frames** of fixed and predetermined duration" (Col 1, Lines 20-21).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of **Alanara** with the means for handling the coded data in frame format of **LS**. The artisan would be motivated to incorporate means for handling the coded data in frame format of **LS** as the data could be transmitted in frames using correct coding mode to maintain transmission quality.

23. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Alanara(AL)** in view of in view of **Le Strat et al. (LS)**.

Claim 10 includes the system of Claim 9, and further specifies:

1. Means for synchronizing are used to synchronize the inserted signaling information and the inserted partitioned signaling information according to the given synchronization of the frame based transmission system.

As per Claim 10, **AL** and **LS** teach the system of Claim 9, as discussed above.

**AL** also teaches that means for synchronizing are used to synchronize the inserted signaling information and the inserted partitioned signaling information according to the given synchronization of the frame based transmission system. **AL** says, "The SYNC word/time slot identifier is used for **slot synchronization**"(Col 1, Lines 45-47). Additionally, **Rasanen (RS)** (US Patent 6,172,968) teaches that "The invention relates to carrying out and **synchronizing data transmission** over such connection" (Col 4, Lines 55-56) and "Depending on the type of frame, the header comprises different kinds of **synchronization and control information**" (Col 6, Lines 15-17).

24. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Alanara(AL)** in view of **Le Strat et al. (LS)**.

Claim 11 includes the system of Claim 9 or 10, and further specifies:

1. Means for channel coding and decoding are used to channel code and decode the signaling information provided by the means for inserting and evaluating signaling information into and from individual frames.

As per Claim 11, **AL** and **LS** teach the system of Claim 9 or 10, as discussed above.

**AL** teaches that means for channel coding and decoding are used to channel code and decode the signaling information provided by the means for inserting and evaluating signaling information into and from individual frames. **AL** says, "To make the **channel coding** of the free portion of the last slot more resistive to channel errors, a 1/8 rate **convolutional coding** can be employed by the controller" (Col 6, Lines 41-43).

25. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Alanara(AL)** in view of **Le Strat et al. (LS)**.

Claim 12 includes the system of Claim 9, and further specifies:

1. Means for coding are used to channel code and decode the signaling information provided by the means for partitioning signaling information and inserting and evaluating the partitioned information into and from different frames.

As per Claim 12, **AL** and **LS** teach the system of Claim 9, as discussed above.

**Alanara(AL)** teaches that means for coding are used to channel code and decode the signaling information provided by the means for partitioning signaling information and inserting and evaluating the partitioned information into and from different frames. **AL** says, "An alternative method uses these **additional bits** with any suitable **channel coding** to carry any **other control information to the base station**" (Col 9, Lines 54-56) and "The **channel quality measurement (CQM)** can always utilize the unused **interleaver bits** over **at least two slots** of interleaving" (Col 10, Lines 52-54).

26. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Alanara(AL)** in view of **Le Strat et al. (LS)**.

Claim 13 includes the system of Claim 9, and further specifies:

1. Transmission system is a radio network system.

As per Claim 13, **AL** and **LS** teach the system of Claim 9, as discussed above.

**AL** also teaches that the transmission system is a radio network system. **AL** says, "The invention relates to **radiotelephones** or mobile stations such as those capable of operation with a **cellular network**" (Col 1, Lines 18-20).

27. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Alanara(AL)** in view of **Le Strat et al. (LS)**.

Claim 14 includes the system of Claim 13, and further specifies:

1. The radio network system is a GSM system.

As per Claim 14, **AL** and **LS** teach the system of Claim 13, as discussed above.

**AL** also teaches that radio network system is a GSM system. **AL** says, "In the existing **global systems for mobile communication** (GSM) DTX operation, the entry to the DTX mode is indicated by Control Noise (CN) parameters sent with inband signaling" (Col 3, Lines 1-3).

28. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Alanara(AL)** in view of **Le Strat et al. (LS)**.

Claim 15 includes the system of Claim 9, and further specifies:

1. The signaling information provided by the means for inserting and evaluating signaling information into and from individual frames.
2. The signaling information provided by the means for partitioning signaling information and inserting and evaluating the partitioned information into and from different frames.
3. The signaling information indicates coding modes used by the means for coding and decoding.

As per Claim 15, **AL** and **LS** teach the system of Claim 9, as discussed above.

**AL** teaches that the signaling information is provided by the means for inserting and evaluating signaling information into and from individual frames. **AL** says, "A 40 millisecond frame consists of six time slots" (Col 1, Lines 34-35) and "Operating a mobile station comprising transmitting the data word, using the unused **portion of a slot** containing interleaved signalling word, by **interleaving the data word with the signalling word**" (Col 4, Lines 18-24).

**AL** teaches that the signaling information provided by the means for partitioning signaling information and inserting and evaluating the partitioned information into and from different frames. **AL** says, "An alternative method uses these **additional bits** with any suitable **channel coding** to carry any **other control information** to the **base station**" (Col 9, Lines 54-56) and "The **channel quality measurement (CQM)** can always utilize the unused **interleaver bits over at least two slots** of interleaving" (Col 10, Lines 52-54).

**AL** does not teach that the signaling information indicates coding modes used by the means for coding and decoding. **LS** teaches that signaling information indicates coding modes used by the means for coding and decoding. **LS** says, "A base transceiver station comprises **means for transmitting** to mobile station information representative of **coding and/or transmission modes** selected" (Col 7, Lines 40-42).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of **Alanara** with the signaling information of **LS** indicating coding mode used for coding and decoding data in the transmission system. The artisan would be motivated to incorporate the signaling information of **LS** indicating coding mode used for coding and decoding data in the transmission system as the correct coding mode information could then be sent to the mobile station.

29. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Alanara(AL)** in view of **Le Strat et al. (LS)**.

Claim 16 includes the system of Claim 15, and further specifies:

1. The system is a fixed part of the radio network system.

As per Claim 16, **AL** and **LS** teach the system of Claim 15, as discussed above.

**AL** does not teach that the system is a fixed part of the radio network system. **Le Strat et al. (LS)** teaches that the system is a fixed part of the radio network system. **LS** says, "A base transceiver station comprises **means for transmitting** to mobile station information representative of **coding and/or transmission modes** selected" (Col 7, Lines 40-42).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of **Alanara** with the signaling information in the fixed part of **LS** indicating coding mode used for coding and decoding data in the transmission system. The artisan would be motivated to incorporate the signaling information in the fixed part of **LS** indicating coding mode used for coding and decoding data in the transmission system as the correct coding mode information could then be sent to the mobile station.



30. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Alanara(AL)** in view of **Le Strat et al. (LS)**.

Claim 17 includes the system of Claim 9, and further specifies:

1. The signaling information provided by the means for inserting and evaluating signaling information into and from individual frames indicates coding modes used by the means for coding and decoding.
2. The signaling information provided by the means for partitioning signaling information inserting and evaluating the partitioned information into and from different frames indicates a quality (criterion) measurement for transmission.

As per Claim 17, **AL** and **LS** teach the system of Claim 9, as discussed above.

**AL** teaches the signaling information provided by the means for inserting and evaluating signaling information into and from individual frames. **AL** says, "A 40 millisecond frame consists of six time slots" (Col 1, Lines 34-35) and "Operating a mobile station comprising transmitting the data word, using the unused **portion of a slot** containing interleaved signalling word, by **interleaving the data word with the signalling word**" (Col 4, Lines 18-24).

**AL** does not teach that the signaling information indicates coding modes used by the means for coding and decoding. **LS** teaches that signaling information indicates coding modes used by the means for coding and decoding. **LS** says, "A base transceiver station comprises **means for transmitting** to mobile station information representative of **coding and/or transmission modes** selected" (Col 7, Lines 40-42).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of **Alanara** with the signaling information of **LS** indicating coding mode used for coding and decoding data in the transmission system. The artisan would be motivated to

incorporate the signaling information of **LS** indicating coding mode used for coding and decoding data in the transmission system as the correct coding mode information could then be sent to the mobile station.

**AL** teaches the signaling information provided by the means for partitioning signaling information inserting and evaluating the partitioned information into and from different frames. **AL** says, "An alternative method uses these **additional bits** with any suitable **channel coding** to carry any **other control information** to the **base station**" (Col 9, Lines 54-56) and "The **channel quality measurement (CQM)** can always utilize the unused **interleaver bits** over **at least two slots** of interleaving" (Col 10, Lines 52-54).

**AL** teaches that the signaling information indicates a quality (criterion) measurement for transmission. **AL** says, "While in the Discontinuous transmission (DTX) low power state, the mobile station may still be required to periodically **send channel quality measurements** taken on **adjacent base stations** as part of mobile assisted hand off operation" (Col 2, Lines 9-12).

31. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Alanara(AL)** in view of **Le Strat et al. (LS)**.

Claim 18 includes the system of Claim 17, and further specifies:

1. The system is a mobile part of the radio network system.

As per Claim 18, **AL** and **LS** teach the system of Claim 17, as discussed above.

**AL** teaches that the system is a mobile part of the radio network system. **AL** says, "While in the Discontinuous transmission (DTX) low power state, the mobile station may still be

required to periodically **send channel quality measurements** taken on **adjacent base stations** as part of mobile assisted hand off operation” (Col 2, Lines 9-12).

32. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Alanara(AL)** in view of **Le Strat et al. (LS)**.

Claim 19 includes the system of Claim 18, and further specifies:

1. The quality (criterion) measurement for transmission is evaluated by the mobile part of the radio network system, based on frames received from the fixed part of the radio network system.

As per Claim 19, **AL** and **LS** teach the system of Claim 18, as discussed above.

**AL** teaches that the quality (criterion) measurement for transmission is evaluated by the mobile part of the radio network system, based on frames received from the fixed part of the radio network system. **AL** says, “While in the Discontinuous transmission (DTX) low power state, the mobile station may still be required to periodically **send channel quality measurements** taken on **adjacent base stations** as part of mobile assisted hand off operation” (Col 2, Lines 9-12).

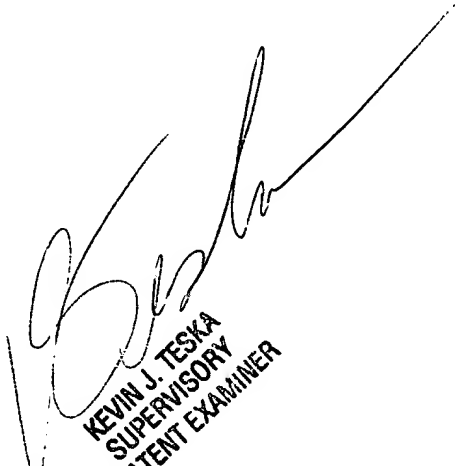
### ***Conclusion***

33. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is 703-305-0043. The examiner can normally be reached on Monday through Friday from 7:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska, can be reached on (703) 305-9704. The fax phone number for the organization where this application or proceeding is assigned is 703-746-7329.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-9600.

K. Thangavelu  
Art Unit 2123  
January 22, 2002



KEVIN J. TESKA  
SUPERVISORY  
PATENT EXAMINER